# Final Report for Pollution Prevention Grant Program

Indiana Department of Environmental Management

**Office of Pollution Prevention and Technical Assistance**

POLLUTION PREVENTION GRANT PROGRAM

100 N. Senate Avenue, Mail Code 64-00

Indianapolis, IN 46204-2251

Internet: www.in.gov/idem/prevention/p2grants/

*INSTRUCTIONS: The Report Form is designed to satisfy standard grant reporting requirements. Grantee should consult Exhibit A of their grant agreement for additional reporting requirements. Attach additional sheets if necessary and label attachments according to the number of the final report question.*

## SECTION 1 GRANT INFORMATION

| | | | |
|---|---|---|---|
| Date: | 11/24/08 | EDS #: | A305-8-145 |
| Grantee: | Hills Pet Nutrition Indiana, Inc. | | |
| Person Completing Report: | Erik Aidukaitis | | |

## SECTION 2 REPORT QUESTIONS

1) Please provide a summary of grant funded activities.

In the manufacturing of extruded pet nutrition products, Hill's Pet Nutrition Indiana Inc. ("The Company") uses four high pressure extruders to form the product into the proper shapes. This extrusion process generates heat. The extruders are water cooled and use potable water to control the temperatures of the barrels. This cooling water was then discharged to the drains. Running four extruders 340 days per year used in excess of 9 million gallons of potable water annually. An additional 20 million gallons of hot potable water is used in the manufacturing process to mix the flours and grains in the cooking process.

By adding a water softener and capturing the discharged cooling water into a holding tank, the spent cooling water was recaptured and reintroduced into the processing system. The cooling water was seen to increase from 68 degrees F to 86 degrees F during the cooling process. The warmed potable water was reintroduced back into the boilers and hot water process which requires much hotter water and now the system replaces cooler potable water that was being drawn from the potable city water supply. The recaptured cooling water was then replaced with fresh cold water for the barrel cooling process to continue.

This process has decreased usage of municipal potable water by 9,527,000 gallons and decreased natural gas usage by 1425 million BTU saving an estimated $36,863 annually.

a) Were the goals outlined in the grant application attained?

The goals of reducing water usage and water discharge to the municipal treatment facility were exceeded. The goal of reducing energy required at the boilers was achieved with a reduction of 1425 Million BTU energy reduction.

2) Has the amount of pollutants decreased and/or has the amount of conserved natural resources increased?

Yes. Clean potable water usage at the facility has decreased and conserved this natural resource.

a) Provide increase or decrease in appropriate metrics and provide the method for calculating this.

Water consumption & discharge decrease:

27.8 gpm x 1440 min / day x .70 operating efficiency x 340 operating days per year = 9,527,000 gallons per year discharge reduction
This converts to 1,273,575 cubic feet of water. At a current cost of $1.7427 per 100 cubic feet, this will save $22,193 in annual water charges.

Cooling water increased in temperature by 18 degrees which reduced the preheat of the boilers. 1 BTU = 1 degree F rise in 1 lb water

231 lbs per min x 18 deg F temp rise x 1440 min / day x .70 operating efficiency x 340 operating days per year = 1425 million BTU per year
At a current natural gas cost of $10.30 per million BTU, this project will save $14,670 annually in reduced natural gas usage.

3) Provide an annual projection of the amount of pollutants decreased or natural resources conserved.

9,527,000 gallons of potable water decrease in usage and reduction in discharge to the water reclamation district.

1425 million BTU reduction in natural gas usage in the boiler operation.

a) Provide the method for calculating this number(s)?

The water flow meter at the outfall is used to measure the amount of treated water discharged from the facility. The system was started up in July and the full month averages of August, September, and October, were compared against the full month averages of January through June for a monthly average reduction of 837,000 gallons. Extrapolated to a yearly figure this comes to 10,050,000 gallons.

Temperature measurements of the incoming softened cooling water and the returned cooling water as it returned to the boilers is used to calculate the amount of heat recovered from the operation. When multiplied by the average gallons per minute water usage, the BTU's reclaimed was calculated to 1,425 million BTU's recovered to preheat the water that is now returned to the boilers.

4) If someone wanted to emulate your project, what information would be most helpful? Please outline successes and failures so others can learn from your project.

The use of softened water reduces scale buildup in the cooling channels. An initial attempt to combine exiting water streams at the extruders resulted in poor temperature control of the extruder barrels. By separating the discharge water piping all the way to a collection tank and pumping from the collection tank to the boilers, temperature control at the extruder was maintained.

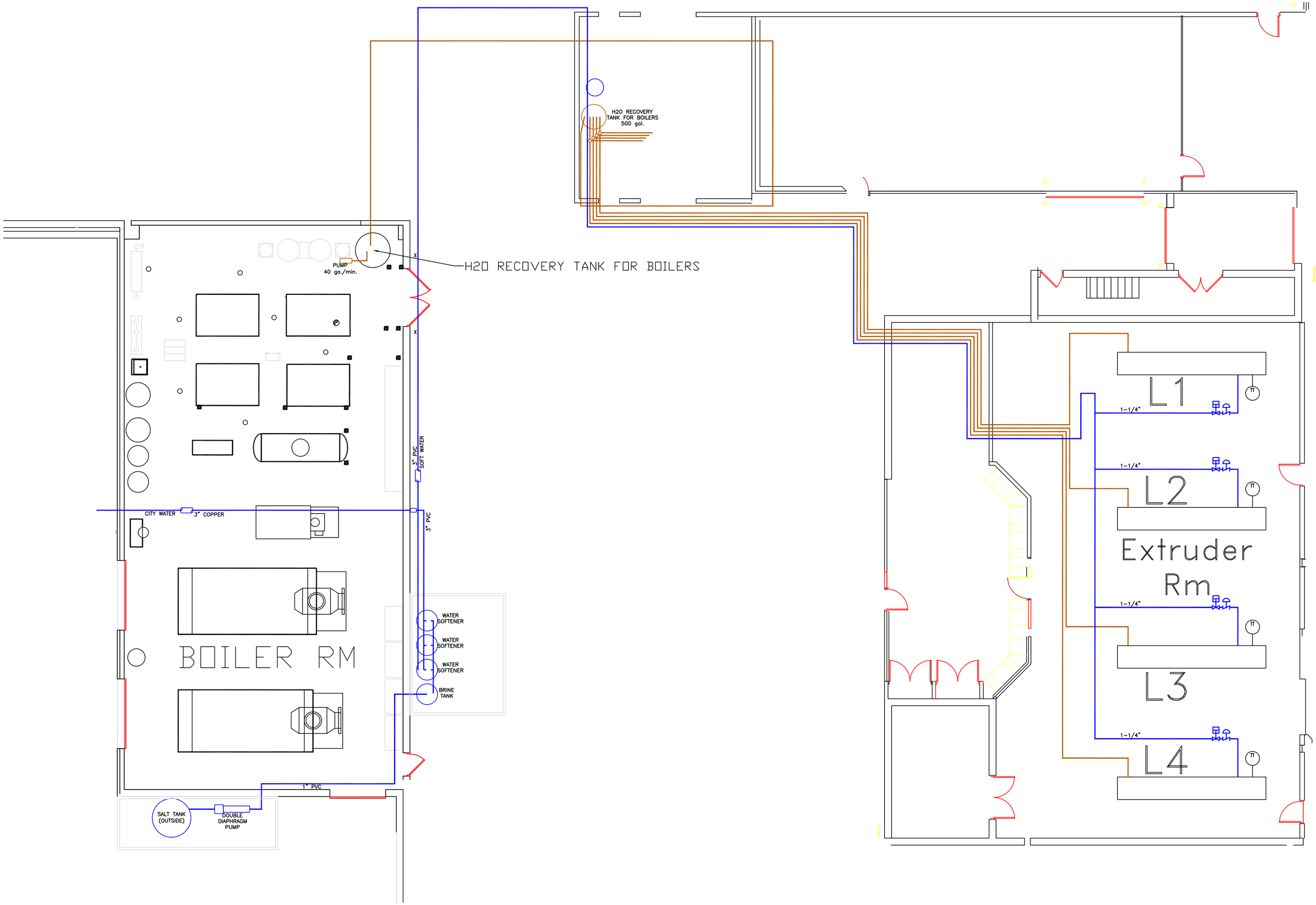
A three tank water softening system was used where multiple tanks can come on line simultaneously to handle spikes in demand. This ensures a constant supply of softened water regardless of demand. An external salt tank is used to pump brine solution to the water softeners so that handling of individual bags of salt is not required. A vendor delivers bulk softening salt to the tank and maintains the salt level.

Attached is a flow diagram of the process to understand how to plumb the system together.

5) Provide a program sustainability plan that indicates how you will continue the program without grant funding.

Maintenance of the new system is simple. It involves maintaining brine solution for the water softeners and maintaining the cooling pumps. The water softener brine solution is also shared with other operations and required for day to day operation. The new cooling pump system has been entered into our preventative maintenance program and will be inspected quarterly and replaced when needed.

6) Attach a completed Grant Expenditure Report that details all expenditures made during the grant term.






Hill's Pet Nutrition

Manufacturing Plants In

Topeka, Ks Bowling Green, Ky
Los Angeles, Ca Richmond, In
Etten-Luer, The Netherlands

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| DRAWN BY: WLB | DEPARTMENT: PROJECTS | APPROVED BY: * |

Hill's

RICHMOND
ENGINEERING DEPARTMENT

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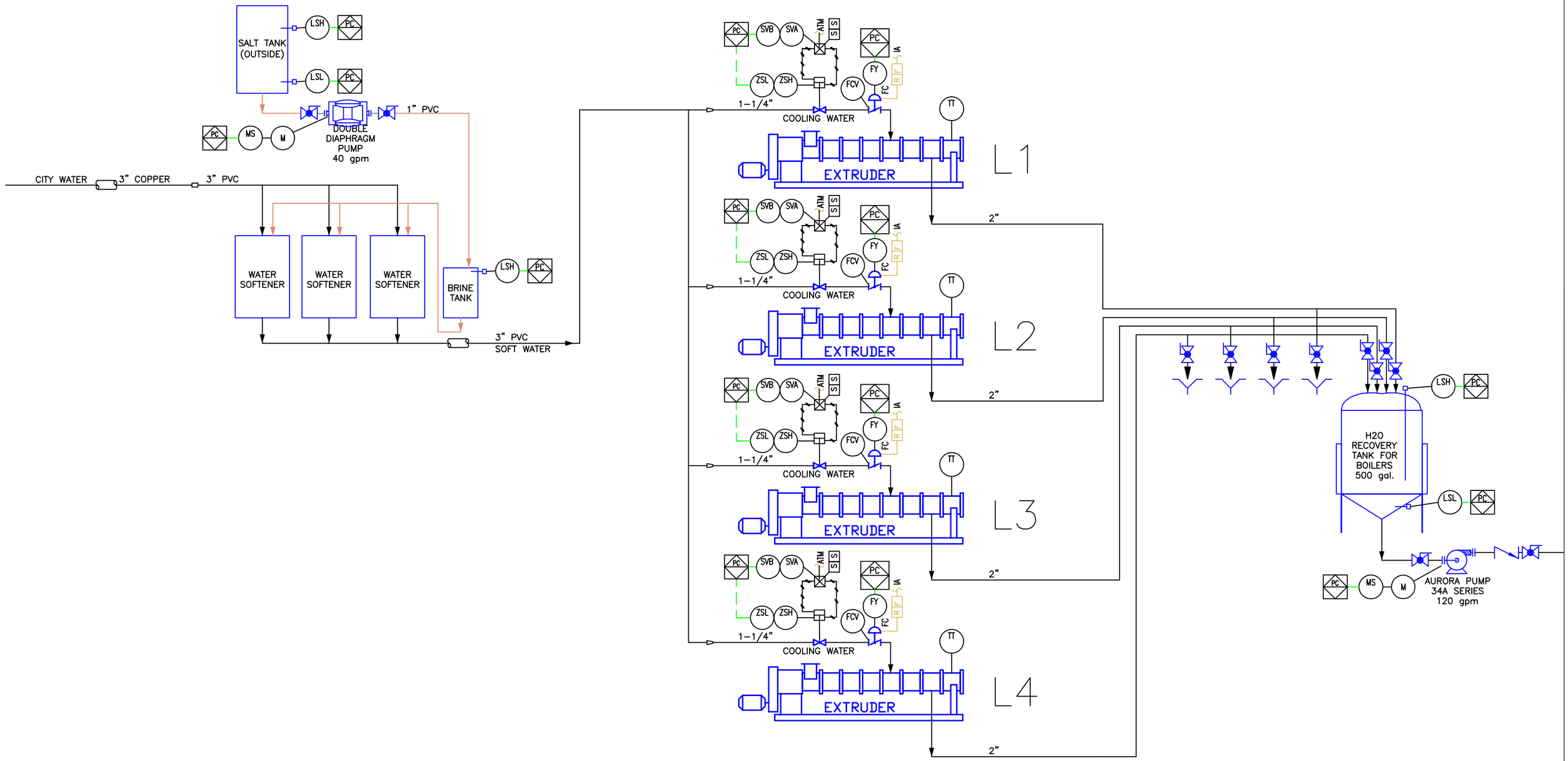




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